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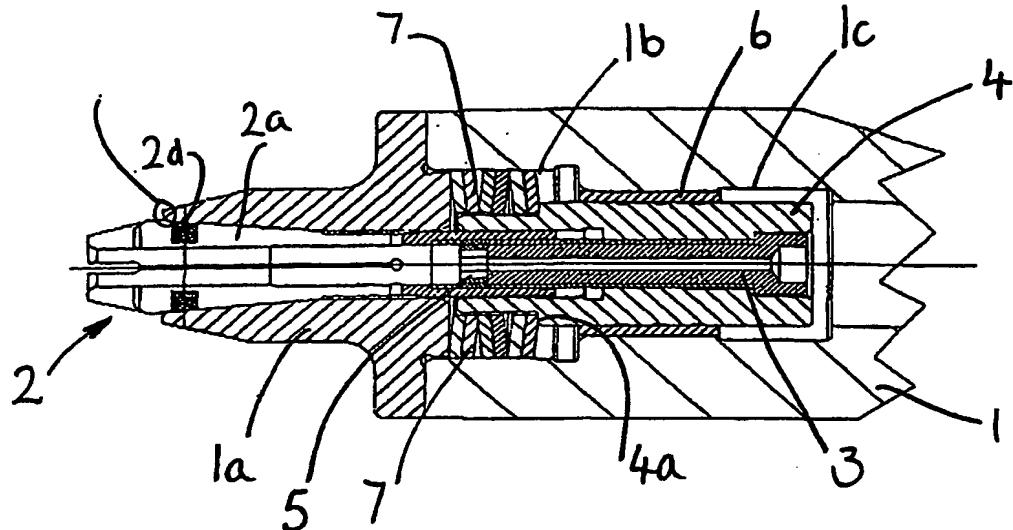
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Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: ROTARY TOOL HOLDER ASSEMBLIES



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(57) Abstract: A rotary tool holder assembly comprising a collet (2) carried by a shaft (1). The collet (2) is moveable relative to the shaft (1) between a tool gripping position, in which an inserted tool can be gripped for rotation, and a tool release position. In some cases, the shaft (1) comprises a bore, an inner surface of which is shaped for contact with an outer surface of the collet (2). The shaft (1) and collet (2) are shaped such that when the rotary tool holder assembly is rotated at a predetermined high speed the shape of the inner surface of the shaft (1) substantially matches the shape of the outer surface of the collet (2). A friction reducing coating is provided between at least a portion of the inner surface of the shaft (1) and the outer surface of the collet (2). In alternatives, particular parts of the rotary tool holder may have a friction reducing coating.



**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/002214

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 B23B31/20 B23B31/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 B23B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.                  |
|----------|--|--|
| X        | PATENT ABSTRACTS OF JAPAN<br>vol. 2000, no. 06,<br>22 September 2000 (2000-09-22)<br>-& JP 2000 071115 A (TOYOTA MOTOR CORP),<br>7 March 2000 (2000-03-07)<br>abstract; figures<br>----- | 1,2,4,8,<br>28                         |
| Y        |  | 5,6                                    |
| X        | US 5 078 558 A (ARAI KUNIO ET AL)<br>7 January 1992 (1992-01-07)<br><br>column 5, line 61 - column 6, line 31<br>figures 5,5E<br>-----   | 1,4,8,<br>11,13,<br>14,16,<br>17,19,28 |
| X        | US 5 820 136 A (AULTMAN WILLIAM M ET AL)<br>13 October 1998 (1998-10-13)<br>column 5, line 32 - column 6, line 30<br>figures 1-5<br>-----<br>-/-   | 1,2,4,8                                |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

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## Name and mailing address of the ISA

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International Application No  
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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| X          | US 3 625 528 A (SAGE IRA H)<br>7 December 1971 (1971-12-07)<br>column 1, line 9 - line 16<br>column 2, line 45 - column 3, line 15<br>figure 2<br>----- | 1,4,8                 |
| Y          | GB 2 002 660 A (HAINBUCH GMBH & CO)<br>28 February 1979 (1979-02-28)<br>page 1, line 71 - line 79<br>-----  | 2,5                   |
| Y          | GB 1 216 694 A (CATERPILLAR TRACTOR CO)<br>23 December 1970 (1970-12-23)<br>page 2, line 71 - line 81<br>-----  | 2,5                   |
| A          | DE 36 35 910 A (HERTEL KARL)<br>4 June 1987 (1987-06-04)<br>figure 1<br>-----   | 13                    |

# INTERNATIONAL SEARCH REPORT

ational application No.  
PCT/GB2004/002214

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,2,4-6,8,11,13,14,16,17,19,28

### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International Application No. PCT/ GB2004/ 002214

### FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,2,4-6,8,11,13,14,16,17,19,28

Tool holder assembly with centrifugal force compensation  
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2. claims: 3,7,9,10,12,15,18,20-27,29-82

Rotary Tool Holder with friction reducing coating  
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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/002214

| Patent document cited in search report | Publication date | Patent family member(s) |               | Publication date |
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